REMARKS

Favorable reconsideration is respectfully requested.

The claims are 1-5. Claims 1-5 are currently amended. Claim 6 is cancelled.

The "single-walled carbon nanotube" amendments to the claims are supported in original claim 6.

The remaining amendments are editorial and self-explanatory.

No new matter is added.

Claim Rejections under 35 U.S.C. § 112

Claims 1-6 are rejected under 35 U.S.C. § 112, first paragraph, as not meeting the enablement requirement. The current claim amendments fully address this rejection.

Prior Art Rejections

Claims 1, 2, 4 and 6 are rejected under 35 U.S.C. § 102(a) as being anticipated by Ajayan et al. ((26 April 2002) Science, 296(5568): 705).

Claims 1, 2, 3, 4 and 6 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Ajayan et al. and Huang et al. ((February 2002) Chemosphere, 46(6): 815-25).

Claims 1, 2, 4 and 6 are rejected under 35 U.S.C. § 102(a) as being anticipated Braidy et al. ((November 2002) Nano Letters, 2(11): 1277-80).

Claims 1-6 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Braidy et al. and Huang et al.

Claims 1-6 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Kataura, et al. ((1999) Synthetic Metals, 103: 255-88); Wintmere et al. ((1995) Carbon, 33(7): 893-902); Cooper'315 (U.S. 5, 294,315); Cooper'582 (U.S. 5,116,582); Cooper'877 (U.S. 5,174,877) and Huang et al.

Applicants respectfully traverse each of these rejections.

1. The present Invention

The present invention is directed to a method for selecting specific structures of single-

walled carbon nanotubes by light irradiation. The method obtains single-walled carbon nanotubes with structures which are different from the structures of single-walled carbon nanotubes to be removed, by irradiating single-walled carbon nanotubes with light of a single wavelength so as to generate single-walled carbon nanotubes in specific excited electron states. The present method then oxidizes and combusts the single-walled nanotubes in the excited states to remove them.

2. *Ajayan et al. and Braidy et al. (in view of Huang et al.)*

Ajayan et al. and Braidy et al. describe the use of a flashlight to flash-ignite compositions which comprise many different nanotubes, in experiments carried out a room temperature in an oxygen atmosphere.

However, each of these references use flashlight from a camera as the light source, which consists of light of various wavelengths and has a continuous and broad spectrum.

On the other hand, the present invention uses light of a single wavelength, as recited in claim 1 and as shown in the Examples of the present specification. Herein, a "single wavelength" refers to a spectrum that is a discreet sharp peak, and is not a broad spectrum as in a camera flashlight. Light which is a discreet single wavelength can selectively excite single-walled carbon nanotubes of a specific diameter, thereby enabling precise selection of structure of the single-walled carbon nanotubes. This process was discovered by the present inventors, and was first disclosed in the Examples of the present specification, and is not disclosed or suggested by the prior art.

On the contrary, in the case of flashlight from a camera, as mentioned the spectrum is not discreet and includes a broad range of wavelengths. Therefore, exciting only a single electronic state which corresponds to a specific wavelength of light will not be effected, and the precise, intentional selection of a specific structure of single-walled carbon nanotube will generally not be accomplished. Accordingly, selectively removing single-walled carbon nanotubes by irradiating with a specific wavelengths of light is not disclosed or suggested by the prior art.

In other words, in the case of using flashlight from a camera, a plurality of unspecified electronic states will be excited simultaneously which will result in the inhibition of the precise

and intentional selection of structures of single-walled carbon nanotubes as in the present invention. One of ordinary skill in the art would not expect a plurality of unspecified electron states, as in the prior art, to be excited in the experimental results shown in the Examples of the present specification.

Applicants also note that in the case of irradiation with a flashlight, exothermic heat generation from the single-walled carbon nanotubes is extremely large. In fact, single-walled carbon nanotubes generally ignite with flashlight irradiation. This will randomly distribute the single-walled carbon nanotubes in a large number of unstable electronics states. This will then prevent the selection of a certain structure of single-walled carbon nanotube for removal as presently claimed.

With regard to the rejections under 35 U.S.C. § 103, Huang et al. only relates to the oxidation of a compound which is not a single-walled carbon nanotube, and which is not analogous to a carbon nanomaterial. Huang et al. does not remedy the deficiencies of Ajayan et al. and Braidy et al. described above. Accordingly, the combination of Ajayan et al. or Braidy et al. with Huang et al. does not suggest the presently claimed combination of irradiation of single-walled carbon nanotubes, with oxidation and combustion, as recited in the present claims. The compounds and the conditions are completely different between the present invention and Huang et al.

3. *Kataura et al., Wintmere et al., Cooper '315, Cooper '582, Cooper '877, and Huang et al.*

The Examiner asserts that the present invention is rendered obvious by combination of a general theory related to single-walled carbon nanotubes (Kataura et al. and Wintmere et al.), and a general insight related to the oxidation or photolysis of compounds which are not single-walled nanotubes (see e.g., Cooper et al.).

However, Kataura et al. and Wintmere et al. do not disclose or suggest the behavior after excitation, as recited in claim 1, for single-walled carbon nanotubes. In fact, the behavior and efficiency of photolysis with photo-oxidation will largely depend on the particular types of compounds used. Therefore, a theoretical discussion without experiment and reduction to

practice does not disclose or suggest the present invention. This is especially true with respect to the presently claimed behavior with regard to photolysis and photo-oxidation of single-walled carbon nanotubes. Therefore, the methods described by the present claims are not disclosed or suggested by the theory presented in the cited prior art.

No further issues remaining, allowance of this application is respectfully requested.

If the Examiner has any comments or proposals for expediting prosecution, please contact undersigned at the telephone number below.

Respectfully submitted,

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